

SN 10/625,763  
Docket No. S-100,646  
In Response to Office Action dated March 16, 2005

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**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

Claim 1: (canceled)

Claim 2-14: (canceled)

Claim 15: (canceled)

Claim 16: (canceled)

Claim 17-30: (canceled)

- Claim 31: (original) An apparatus for removing heavy metals from water comprising:
- a. a water conduit for introducing water containing heavy metals into the apparatus;
  - b. a conduit for introducing a quantity of magnetite or magnetite precursors into the apparatus;
  - c. a mixing chamber wherein the water containing heavy metals is mixed with the magnetite such that at least a portion of the heavy metals are bound to the magnetite;
  - d. a magnetic separator configured such that magnetite is removed from the water by application of a magnetic field; and
  - e. an outlet conduit for conducting water out of the apparatus.
- Claim 32: (original) An apparatus as defined in claim 31 wherein a solid matrix is positioned within the magnetic separator.
- Claim 33: (original) An apparatus as defined in claim 32 wherein the solid matrix displays remnant magnetism.
- Claim 34: (original) An apparatus as defined in claim 33 further comprising a source of external magnetism in magnetic communication with the matrix such that the matrix displays a magnetic field.
- Claim 35: (original) An apparatus as defined in claim 31 further comprising a conduit for introducing a fluid in reverse direction to the direction of flow of the

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water such that said fluid removes magnetite and bound metal from the matrix.

Claim 36: (original) An apparatus as defined in claim 31 wherein the water conduit is selected such that the water superficial velocity through the magnetic separator is in the range of from about 0.5 cm/sec. to about 2 cm/sec.